

bus complying with a USB standard.

61. (Amended) A storage medium storing a program for implementing a data transfer processing method in a system in which a device is connected by a serial bus, the program comprising:

94 code of a band width calculation step of calculating a band width based on a performance of the device;

code of a channel ensuring step of ensuring a channel having the band width calculated in the band width calculation step; and

code of a transfer step of transferring data with the device using the channel ensured in the channel ensuring step.

REMARKS

This application has been reviewed in light of the Office Action dated October 2, 2002. Claims 1-61 are presented for examination, of which Claims 1, 20, 39, and 61 are in independent form. Claims 1-17, 20-30, 32-49, and 52-61 have been amended as to formal matters and/or to define more clearly what Applicant regards as his invention. Favorable reconsideration is requested.

Claims 1-61 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicant has carefully reviewed and amended Claims 1-17, 20-30, 32-49, and 52-61, as deemed necessary, with special attention to the points raised in sections 5-8 of the Office

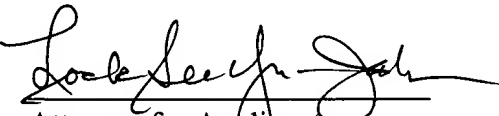
Action. More specifically, as to independent Claims 1, 20, 39, and 61, Applicant respectfully submits that one of ordinary skill in the relevant art would understand that to ensure a channel of a particular bandwidth is to obtain a channel of that bandwidth, in view of what is disclosed in the specification (see, for example, page 43, line 5, to page 44, line 24). Also, Claims 20 and 61 have been amended to change "the" to --a-- in reciting the claimed elements.

Accordingly, Applicant submits that Claims 1-61 are sufficiently definite, and respectfully requests withdrawal of the rejections under 35 U.S.C. § 112, second paragraph.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,


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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Amended) A data transfer apparatus for transferring data to a [plurality of devices] device connected by a serial bus, comprising:

band width calculation means for calculating a band width [necessary for data transfer in a specific device out of the plurality of devices] based on a performance of the device;

[first] channel ensuring means for ensuring a [first] channel [corresponding to] having the band width calculated by the band width calculation means; and

[first] transfer means for [performing data transfer about the specific] transferring data with the device using the [first] channel ensured by the channel ensuring means.

2. (Amended) The apparatus according to claim 1, wherein the specific device is a printer.

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3. (Amended) The apparatus according to claim 2, wherein [said] the band width calculation means calculates a band width necessary for data transfer [in] with the printer based on [the basis of] a processing speed of the printer.

4. (Amended) The apparatus according to claim 3, wherein the processing speed of the printer is based on at least one of a print speed, a print resolution, and a printer bit depth.

5. (Amended) The apparatus according to claim 3, wherein the processing speed of the printer is based on at least one of a main scanning period in printing, [the] a number of pixels formed in the main scanning period, and [the] a number of bits representing one pixel.

6. (Amended) The apparatus according to claim 1, further comprising:
second channel ensuring means for ensuring a second channel; and
second transfer means for performing data transfer [about a] with another device other than the [specific] device using the second channel.

7. (Amended) The apparatus according to claim 1, wherein [said first] the transfer means performs isochronous transfer.

8. (Amended) The apparatus according to claim 7, wherein, when no data transfer [about] with the [specific] device is [done] performed, [said first] the transfer means sends invalid data to the [first] channel.

9. (Amended) The apparatus according to claim 1, further comprising [specific] device setting means for setting at least one of [the] a plurality of devices as the [specific] device.

10. (Amended) The apparatus according to claim 9, wherein [said specific] the device setting means sets at least two devices as the [specific] device.

11. (Amended) The apparatus according to claim 7, further comprising control means for, when a band width necessary for data transfer [about a] with another device other than the [specific] device is not more than a predetermined value, controlling to perform data transfer [about] with the other device using the [first] channel.

12. (Amended) The apparatus according to claim 11, wherein the predetermined value is half a band width calculated by [said] the band width calculation means.

13. (Amended) The apparatus according to claim 7, further comprising control means for, when [the] a number of cycles necessary for data transfer [about a] with another device other than the [specific] device is not more than a predetermined value, controlling to perform data transfer [about] with the other device using the [first] channel.

14. (Amended) The apparatus according to claim 1, further comprising monitoring means for monitoring a usage of the [specific] device by the [first] channel, [and said first] wherein the channel ensuring means ensures the [first] channel again in accordance with the usage of the [specific] device.

15. (Amended) The apparatus according to claim 9, further comprising monitoring means for monitoring a usage of the [specific] device by the [first] channel, [and said specific] wherein the device setting means sets the [specific] device again in accordance with the

usage of the [specific] device.

16. (Amended) The apparatus according to claim 9, further comprising monitoring means for monitoring usages of the plurality of devices, [and said specific] wherein the device setting means resets the [specific] device in accordance with the usages of the plurality of devices.

17. (Amended) The apparatus according to claim 1, wherein [said first] the channel ensuring means ensures the [first] channel when the band width is not more than a predetermined value.

20. (Amended) A data transfer method in a system in which a [plurality of devices are] device is connected by a serial bus, comprising:

[the] a band width calculation step of calculating a band width [necessary for data transfer in a specific device out of the plurality of devices] based on a performance of the device;

[the first] a channel ensuring step of ensuring a [first] channel [corresponding to] having the band width calculated in the band width calculation step; and

[the first] a transfer step of [performing data transfer about the specific] transferring data with the device using the [first] channel ensured in the channel ensuring step.

21. (Amended) The method according to claim 20, wherein the [specific] device

is a printer.

22. (Amended) The method according to claim 21, wherein the band width calculation step comprises calculating a band width necessary for data transfer [in] with the printer based on [the basis of] a processing speed of the printer.

23. (Amended) The method according to claim 22, wherein the processing speed of the printer is based on at least one of a print speed, a print resolution, and a printer bit depth.

24. (Amended) The method according to claim 22, wherein the processing speed of the printer is based on at least one of a main scanning period in printing, [the] a number of pixels formed in the main scanning period, and [the] a number of bits representing one pixel.

25. (Amended) The method according to claim 20, further comprising:
[the] a second channel ensuring step of ensuring a second channel; and
[the] a second transfer step of performing data transfer [about a] with another device other than the [specific] device using the second channel.

26. (Amended) The method according to claim 20, wherein the [first] transfer step comprises performing isochronous transfer.

27. (Amended) The method according to claim 26, wherein, when no data transfer [about] with the [specific] device is [done] performed, the [first] transfer step comprises sending invalid data to the [first] channel.

28. (Amended) The method according to claim 20, further comprising [the specific] a device setting step of setting at least one of [the] a plurality of devices as the [specific] device.

29. (Amended) The method according to claim 28, wherein the [specific] device setting step comprises setting at least two devices as the [specific] device.

30. (Amended) The method according to claim 26, wherein, when a band width necessary for data transfer [about a] with another device other than the [specific] device is not more than a predetermined value, the [first] transfer step comprises controlling to perform data transfer [about] with the other device using the [first] channel.

32. (Amended) The method according to claim 26, wherein, when [the] a number of cycles necessary for data transfer [about a] with another device other than the [specific] device is not more than a predetermined value, the [first] transfer step comprises controlling to perform data transfer [about] with the other device using the [first] channel.

33. (Amended) The method according to claim 20, further comprising:

[the] a monitoring step of monitoring a usage of the [specific] device by the [first] channel; and

[the] a channel re-ensuring step of [ensures] ensuring the [first] channel again in accordance with the usage of the [specific] device.

34. (Amended) The method according to claim 28, further comprising:

[the] a monitoring step of monitoring a usage of the [specific] device by the [first] channel; and

[the] a device resetting step of resetting [a specific] the device [in the plurality of devices] in accordance with the usage of the [specific] device.

35. (Amended) The method according to claim 28, further comprising:

[the] a monitoring step of monitoring usages of the plurality of devices; and

[the] a device resetting step of [setting a specific] resetting the device [in the plurality of devices again] in accordance with the usages of the plurality of devices.

36. (Amended) The method according to claim 20, wherein the [first] channel

ensuring step comprises ensuring the [first] channel when the band width is not more than a predetermined value.

37. (Amended) The method according to claim 20, wherein the serial bus is a bus [matching or] complying with an IEEE 1394 standard.

38. (Amended) The method according to claim 20, wherein the serial bus is a bus [matching or] complying with a USB standard.

39. (Amended) A data transfer system for transferring data [between a plurality of devices] with device connected by a serial bus, comprising:

band width calculation means for calculating a band width [necessary for data transfer in a specific device out of the plurality of devices] based on a performance of the device;

[first] channel ensuring means for ensuring a [first] channel [corresponding to] having the band width calculated by the band width calculation means; and

[first] transfer means for [performing data transfer about the specific] transferring data with the device using the [first] channel ensured by the channel ensuring means.

40. (Amended) The system according to claim 39, wherein the [specific] device is a printer.

41. (Amended) The system according to claim 40, wherein [said] the band width calculation means calculates a band width necessary for data transfer [in] with the printer based on [the basis of] a processing speed of the printer.

42. (Amended) The system according to claim 41, wherein the processing speed of the printer is based on at least one of a print speed, a print resolution, and a printer bit depth.

43. (Amended) The system according to claim 41, wherein the processing speed of the printer is based on at least one of a main scanning period in printing, [the] a number of pixels formed in the main scanning period, and [the] a number of bits representing one pixel.

44. (Amended) The system according to claim 39, further comprising:
second channel ensuring means for ensuring a second channel; and
second transfer means for performing data transfer [about a] with another device other than the [specific] device using the second channel.

45. (Amended) The system according to claim 39, wherein [said first] the transfer means performs isochronous transfer.

46. (Amended) The system according to claim 45, wherein, when no data transfer [about] with the [specific] device is [done] performed, [said first] the transfer means sends invalid data to the [first] channel.

47. (Amended) The system according to claim 44, wherein
the serial bus is connected to a plurality of devices[include],

the plurality of devices include a controller, and
each means is incorporated in the controller

48. (Amended) The system according to claim 47, further comprising [specific]
device setting means for setting at least one of the plurality of devices other than the controller as
the [specific] device.

49. (Amended) The system according to claim 48, wherein [said specific] the
device setting means sets at least two devices as the [specific] device.

52. (Amended) The system according to claim 45, further comprising control
means for, when a band width necessary for data transfer [about a] with another device other than
the [specific] device is not more than a predetermined value, controlling to perform data transfer
[about] with the other device using the [first] channel.

53. (Amended) The system according to claim 52, wherein the predetermined
value is half a band width calculated by [said] the band width calculation means.

54. (Amended) The system according to claim 45, further comprising control
means for, when [the] a number of cycles necessary for data transfer [about a] with another
device other than the [specific] device is not more than a predetermined value, controlling to

perform data transfer [about] with the other device using the [first] channel.

55. (Amended) The system according to claim 39, further comprising monitoring means for monitoring a usage of the [specific] device by the [first] channel, [and said first] wherein the channel ensuring means ensures the [first] channel again in accordance with the usage of the [specific] device.

56. (Amended) The system according to claim 48, further comprising monitoring means for monitoring a usage of the [specific] device by the [first] channel, [and said specific] wherein the device setting means sets the [specific] device again in accordance with the usage of the [specific] device.

57. (Amended) The system according to claim 48, further comprising monitoring means for monitoring usages of the plurality of devices, [and said specific] wherein the device setting means resets the [specific] device in accordance with the usages of the plurality of devices.

58. (Amended) The system according to claim 39, wherein [said first] the channel ensuring means ensures the [first] channel when the band width is not more than a predetermined value.

59. (Amended) The system according to claim 39, wherein the serial bus is a bus [matching or] complying with an IEEE 1394 standard.

60. (Amended) The system according to claim 39, wherein the serial bus is a bus [matching or] complying with a USB standard.

61. (Amended) A storage medium [for] storing a program [codes of] for implementing a data transfer processing method in a system in which a [plurality of devices are] device is connected by a serial bus, the program comprising:

[a] code of [the] a band width calculation step of calculating a band width [necessary for data transfer in a specific device out of the plurality of devices] based on a performance of the device;

[a] code of [the first] a channel ensuring step of ensuring a [first] channel [corresponding to] having the band width calculated in the band width calculation step; and

[a] code of [the first] a transfer step of [performing data transfer about the specific] transferring data with the device using the [first] channel ensured in the channel ensuring step.